Partial Operational Readiness Clearance (Non-beam operation)
COUPP (E961) 60kg BUBBLE CHAMBER SYSTEM TEST
30 July 2009

AUTHORIZATION TO PROCEED WITH THE UNATTENDED OPERATION OF60KG BUBBLE CHAMBER SYSTEM TEST FOR COUPP IN D0 ASSEMBLY BUILDING

REVIEWED AND APPROVED BY: **DATE**

[signature] 8/5/09

Particle Physics Division Head
Comments/Exceptions:

[signature] 13747N 8.5.09

Particle Physics Senior Safety Officer
Comments/Exceptions:

Leo Bellantoni 30 July 2009

Committee Chair Leo Bellantoni
Comments/Exceptions:

Submitted By:

[signature] 30 July 2009

Requester Russ Rucinski

Electronic approvals for this form are acceptable. Please forward your responses to all recipients. A signed paper form (copy) of this document will exist in the Particle Physics Division Office. The original signed document will stay with the experiment requesting clearance.

Rev Aug 2008

E-961 COUPP 60 KG BUBBLE CHAMBER: **HAZARD IDENTIFICATION CHECKLIST**

Items for which there is anticipated need have been checked. R. Rucinski July 8, 2009

Cryogenics		**Electrical Equipment**		**Hazardous/Toxic Materials**	
	Beam line magnets	X	Cryo/Electrical devices		List hazardous/toxic materials
	Analysis magnets		capacitor banks		planned for use in a beam line or experimental enclosure:
	Target		high voltage		
	Bubble chamber		exposed equipment over 50 V		
Pressure Vessels		**Flammable Gases or Liquids**			
PV Notes: PPD-10109, PPD-10110, PPD-10111	inside diameter 12" dia. 12" dia. 24" dia.	Type:			
200 psig 150 psig 450 psig	operating pressure	Flow rate:			
no windows	window material	Capacity:			
	window thickness	**Radioactive Sources**			
Vacuum Vessels			permanent installation	**Target Materials**	
	inside diameter		temporary use		Beryllium (Be)
	operating pressure	Type:			Lithium (Li)
	window material	Strength:			Mercury (Hg)
	window thickness	**Hazardous Chemicals**			Lead (Pb)
Lasers			Cyanide plating materials		Tungsten (W)
	Permanent installation		Scintillation Oil		Uranium (U)
	Temporary installation		PCBs		Other
	Calibration		Methane	**Mechanical Structures**	
	Alignment		TMAE		Lifting devices
type:			TEA		Motion controllers - manual
Wattage:			photographic developers		scaffolding/elevated platforms
class:			Other: Activated Water?	X	Confined Space Others

From: "Russell A. Rucinski" <rucinski@fnal.gov>
Subject: **COUPP - 60, E-961 pORC request**
Date: July 7, 2009 3:46:02 PM CDT
To: "Dr. Leo Bellanto" <bellanto@fnal.gov>
Cc: Andrew Sonnenschein <sonnensn@fnal.gov>
2 Attachments, 282 KB

Hi Leo,

I would like to request a pORC review and walk through of the COUPP 60 kg bubble chamber located in the pit at the DZero assembly building. The scope of the pORC is for unattended operation of the bubble chamber fluid systems. These systems include automatic operation of the propylene glycol pressure control system, propylene glycol de-gassing operations, automatic pressure cycling of the closed bubble chamber fluid volume, cooling and heating with the chiller cooling loop, and the hot water bath circulation system.

The system should be in good shape for a walk through scheduled for early next week. If your schedule permits, I suggest the afternoon of Tuesday July 14.

I am finalizing an update of a "Safety Review and Operational Document" that puts the required information in one place. Please see the attached table of contents. As soon as the update is completed, I will deliver a couple copies to you for the committee's review. I can go over the contents at the walk through.

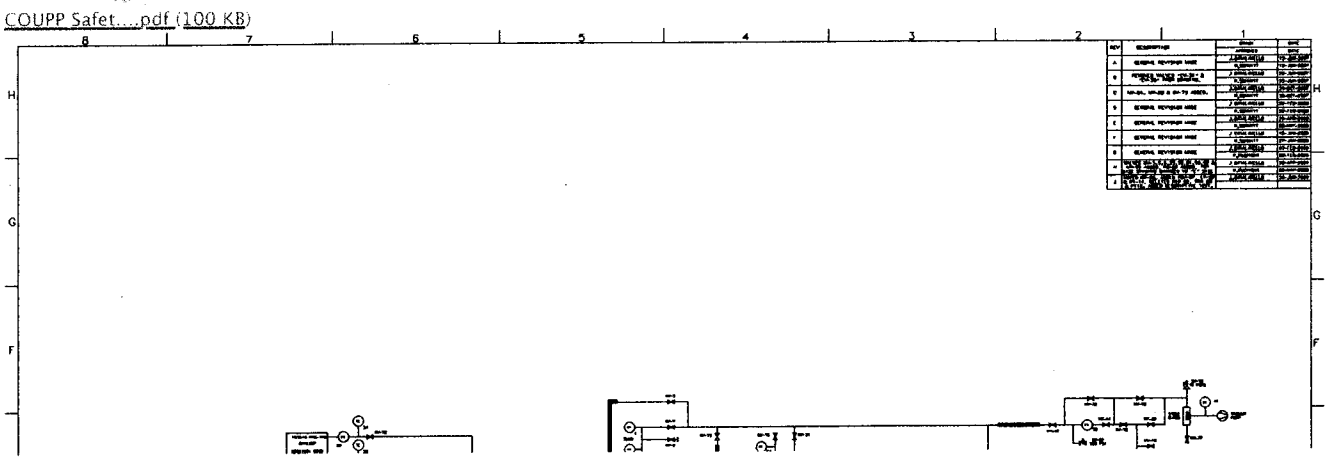
The bubble chamber fluid systems (without hot water system) were previously operated with a pORC last July through December at the Proton Assembly building. The hot water tank system was granted a pORC and operated this March at DZero (without bubble chamber). Now, I would like to operate everything together. Piping runs and instrumentation cables had to be extended to accommodate the bubble chamber being placed inside the water tank. Some items were relocated so that they would not be submerged.

There will be several attended operations that are not included in the scope of the pORC request. These attended operations are: glycol system filling, CF3I batch fill of bubble chamber, operation of the camera system, batch fill of the hot water tank and operation of the photomultiplier tube VETO system. We would like to operate for several months.

Thank you,

Russ Rucinski,
E-961, COUPP-60kg
mechanical project engineer

COUPP Safet....pdf (100 KB)



From: James Priest <priest@fnal.gov>
Subject: **Re: COUPP**
Date: July 30, 2009 2:39:57 PM CDT
To: bellanto <bellanto@fnal.gov>

Yes and all ok. I sent a email weds.

Dr. James Priest Phd
Sr. Fire Strategist & Researcher

On Jul 30, 2009, at 2:13 PM, bellanto <bellanto@fnal.gov> wrote:

> Hi Jim,
>
> Were you happy with your walk-through of the COUPP Wen PM?
>
> *Leo*
>
> ---
>
> Dr. Leo Bellantoni (630)730-2155
> MS 122, Fermilab Batavia, IL 60510

From: James Priest <priest@fnal.gov>
Subject: **Re: COUPP ORC walk-through**
Date: July 22, 2009 3:18:08 PM CDT
To: bellanto <bellanto@fnal.gov>

The only issue I had was the Rack Protection and that should not stop a ORC if it will take a short time to install.

James Priest PhD MS119
Sr. Fire Research & Fire Protection Engineer
ES&H Section
Fermi National Accelerator Lab
Office of Science/U.S. Department of Energy
Managed by Fermi Research Alliance
PO Box 500
Batavia IL 60510
Tel. 630-840-4283
Cell. 312-636-6259
Fax. 630-840-3390

On Jul 22, 2009, at 1:30 PM, bellanto wrote:

> Hi,
> Russ Rucinski still has a few items to go in following up on our walk-through of last week. but I would like to double-check with you now - I believe that you were all basically OK with what you saw. Can you please confirm this?
> thanks
>
> *Leo*
>
> ---
>
> Dr. Leo Bellantoni (630)730-2155
> MS 122, Fermilab Batavia, IL 60510

From: Tug Arkan <arkan@fnal.gov>
Subject: **Re: COUPP**
Date: July 28, 2009 12:56:43 PM CDT
To: bellanto <bellanto@fnal.gov>

Hi Leo,
I finally was able to go through the binder that Russ gave me. All the engineering notes and related documents are done properly, reviewed and approved. I do not foresee any issues from the mechanical safety stand point of view at this moment. This is a relatively complex system but it was operated attended before the setup was moved to D0.
Thanks,
Tug

bellanto wrote:

> Hi Tug,
> How are you coming along with the pounds of documentation that Russ gave you last week?
> Leo
> ---
> Dr. Leo Bellantoni (630)730-2155
> MS 122, Fermilab Batavia, IL 60510

From: Teri Dykhuis <dykhuis@fnal.gov>
Subject: **Re: COUPP ORC walk-through**
Date: July 22, 2009 2:59:54 PM CDT
To: bellanto <bellanto@fnal.gov>, Jim Priest <priest@fnal.gov>, Eric McHugh <emchugh@fnal.gov>
Cc: Russ Rucinski <rucinski@fnal.gov>

I have no issues from an environmental perspective at this time. Thank you for the opportunity to review the experiment.
Teri

----- Original Message -----
From: bellanto
To: Teri Dykhuis ; Jim Priest ; Eric McHugh
Sent: Wednesday, July 22, 2009 1:30 PM
Subject: COUPP ORC walk-through

Hi,
Russ Rucinski still has a few items to go in following up on our walk-through of last week, but I would like to double-check with you now - I believe that you were all basically OK with what you saw. Can you please confirm this?
thanks

Leo

Dr. Leo Bellantoni (630)730-2155
MS 122, Fermilab Batavia, IL 60510

From: Steve Chappa <chappa@fnal.gov>
Subject: **FW: E-961 COUPP walk-through Remediation E-mail**
Date: July 28, 2009 3:06:26 PM CDT
To: Leo Bellantoni <Bellanto@fnal.gov>

HI Dr. Leo,

I sent this email last week but after reviewing the distribution email addresses, your email address came up with a misspelling error (I thought I had corrected this in my contacts but the stupid email tool keeps insisting that I want to use the misspelled name/address). So, I am not sure you received this particular email. Here it is again that contains my recommendation. Sorry about the confusion.

Regards,
Steve Chappa

From: Steve Chappa [mailto:chappa@fnal.gov]
Sent: Wednesday, July 22, 2009 11:33 AM
To: 'Russell A. Rucinski'; Leo Bellantoni; 'Eric McHugh'
Cc: 'Bagby@fnal.gov'; 'Jim Priest'; 'Tug Arkan'; 'Teri Dykhuis'; 'Andrew Sonnenschein'
Subject: RE: E-961 COUPP walk-through Remediation E-mail

Hi Dr. Leo, Russ,

After examining the pictures and the remediation descriptions, my concerns for the COUPP installation are now satisfactorily addressed. I do not need to come out there to physically verify the corrective actions since the 2GroundingBlocks picture clearly shows the corrections. Therefore, I am now recommending the issuance of the ORC for this (COUPP E-961) installation.

Regards,
Steve Chappa

From: Russell A. Rucinski [mailto:rucinski@fnal.gov]
Sent: Wednesday, July 22, 2009 11:08 AM
To: 'Steve Chappa'; Ballanto@fnal.gov; Eric McHugh
Cc: Bagby@fnal.gov; Jim Priest; Tug Arkan; Teri Dykhuis; Andrew Sonnenschein; Russ Rucinski
Subject: RE: E-961 COUPP walk-through Remediation E-mail

Hello Committee.

I would like to report on some remediation action taken on the COUPP – 60 experiment setup at DZero. The majority were electrical in nature based on discussion and e-mail with Steve Chappa.

1. A second grounding wire block was added on the rail of the upper electrical enclosure. The two green grounding wires going into one block were split so each block has one as intended by the design. See "2GroundBlocks" picture. The design of the rail mounting system is such that the mounting rail and the box are grounded through the grounding block so no additional grounding wire was added. The ground path was verified with a multi-meter.

2. The power cords for the heater control box were removed as a good practice. The outlet box that was mounted on the side of the upper enclosure was obsolete since it was used for plugging the heaters in. That outlet box was removed and the conduit hole plugged as a good practice. See "BoxRemove1" picture.

3. The water proof rubber cap was attached to the unused 480 V. connector. See "RubberCap" picture.

4. The wires that were coiled by the aisle way were cleaned up so they are neater and tucked into the rack. See "WireCleanup" picture.

5. The plexiglass shield that protects the SOLA transformers from direct line of sight to the water system was reinstalled. See "Plexiglass" picture. The plexiglass was down at the time of the walk through so that technicians could better access a cable tray when they were working earlier in the day.

6. Cable tray covers were snapped into place.

7. The small aluminum strips that jut up past the water tank were removed in the area around the access ladder. The edges of these strips were sharp and were in the way of the access path. See "TabsRemoved" picture.

8. The UPS in the rack is a 1KVA. We aren't aware of any special requirements regarding special notifications or labeling for the fire department. A standard type rack smoke detection/rack protection chassis is being procured by Erik Ramberg. The UPS will power the rack protection chassis which will in turn supply power to all other components. The surplus rack protection units seen in the high bay at DZero were claimed by others and weren't surplus.

From: "Russell A. Rucinski" <rucinski@fnal.gov>
Subject: **RE: COUPP - 60 pORC request**
Date: July 28, 2009 2:08:53 PM CDT
To: 'bellanto' <bellanto@fnal.gov>, 'Eric McHugh' <emchugh@fnal.gov>
Cc: 'Steve Chappa' <chappa@fnal.gov>, 'Jim Priest' <priest@fnal.gov>
2 Attachments, 1.0 MB

Hi Leo,

1. Steve okayed the electrical remediation via e-mail last week. This was based on the attached picture.

2.) The rack protection module was delivered to DZero. I'll get it in the rack today or tomorrow.

3.) I never heard of the issue with UPS power and notifications or instructions to the fire department. I called the fire department and spoke with the battalion chief and he never heard of that concern. If they remove power from a rack and the electrical fire doesn't go out, they just let it burn. He did additional checking with his electrical safety contact person and e-mailed me back the excerpt below. I will comply.

From FESHM Chapter 5047

http://www-esh.fnal.gov/FESHM/5000/5047.PDF

6. Identification and Labeling - All IPS/UPS units except cord and plug powered units shall have "fed from" labels on the unit, prominently displayed which indicates the panelboard and circuit breaker supplying normal power and the voltage of the incoming power. A "CAUTION" nameplate is required which describes that when primary power is disabled, battery power generates backup power for approximately "XX" minutes. This "CAUTION" nameplate must also indicate that only authorized personnel can perform maintenance or repair service on the unit. Additionally, a telephone number indicating the "responsible party" to call in the event of a problem must be included on the nameplate.

Larry Meyer, Battalion Chief
Fermilab Fire Department
PO Box 500 M/S 302
Batavia, IL 60510-0500
630-840-3428
FAX 630-840-8037

3.) The splash shield is in place. A picture is attached.

4.) I completed an ODH and CF3I safety analysis and went over it with Eric this morning. ODH is not a concern. CF3I is a concern during the batch transfer of CF3I into or out of the bubble chamber if no precautions are taken. The risk is equivalent to having the likelihood of using a fire extinguisher every 4 days. If Eric is happy with it then I am not sure anything else needs to be done.

5.) I have completed the pressure testing permits and Eric McHugh signed off on them. I hope to start pressure testing tomorrow and hopefully finish it on Thursday.

6.) Thank you for your review Tug.

7.) I would like the pORC as soon as the panel chair/designee is satisfied.

Sincerely,

Russ Rucinski

From: bellanto [mailto:bellanto@fnal.gov]
Sent: Tuesday, July 28, 2009 1:24 PM
To: Russ Rucinski; Eric McHugh
Cc: Steve Chappa; Jim Priest
Subject: Fwd: COUPP

Hi Russ,
So with the message below from Tug, I think our remaining items are:

1) The modifications to the electrical power as per Steve Chappa - done, but he needs to OK it
2) Rack power interrupt as per Jim Priest - done? Needs his OK?
3) I believe there is a 2nd issue which is will the firemen be able to kill all the power easily.
Again that is Jim's department.
3) Splash shield put back in place - done? Steve can check this at the same time
4) CF3I concentration over 0.002 concentration - Did you do this calculation? Is Eric OK with it?
5) Pressure test permit - I do not know the status.

I won't be back on site until Monday. In the case where all these ducks are lined up though, I think we can coordinate to do the ORC sign-off by email.

Leo

Dr. Leo Bellantoni (630)730-2155
MS 122, Fermilab Batavia, IL 60510

Begin forwarded message:

From: Tug Arkan <arkan@fnal.gov>
Date: July 28, 2009 12:56:43 PM CDT
To: bellanto <bellanto@fnal.gov>
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bellanto wrote:

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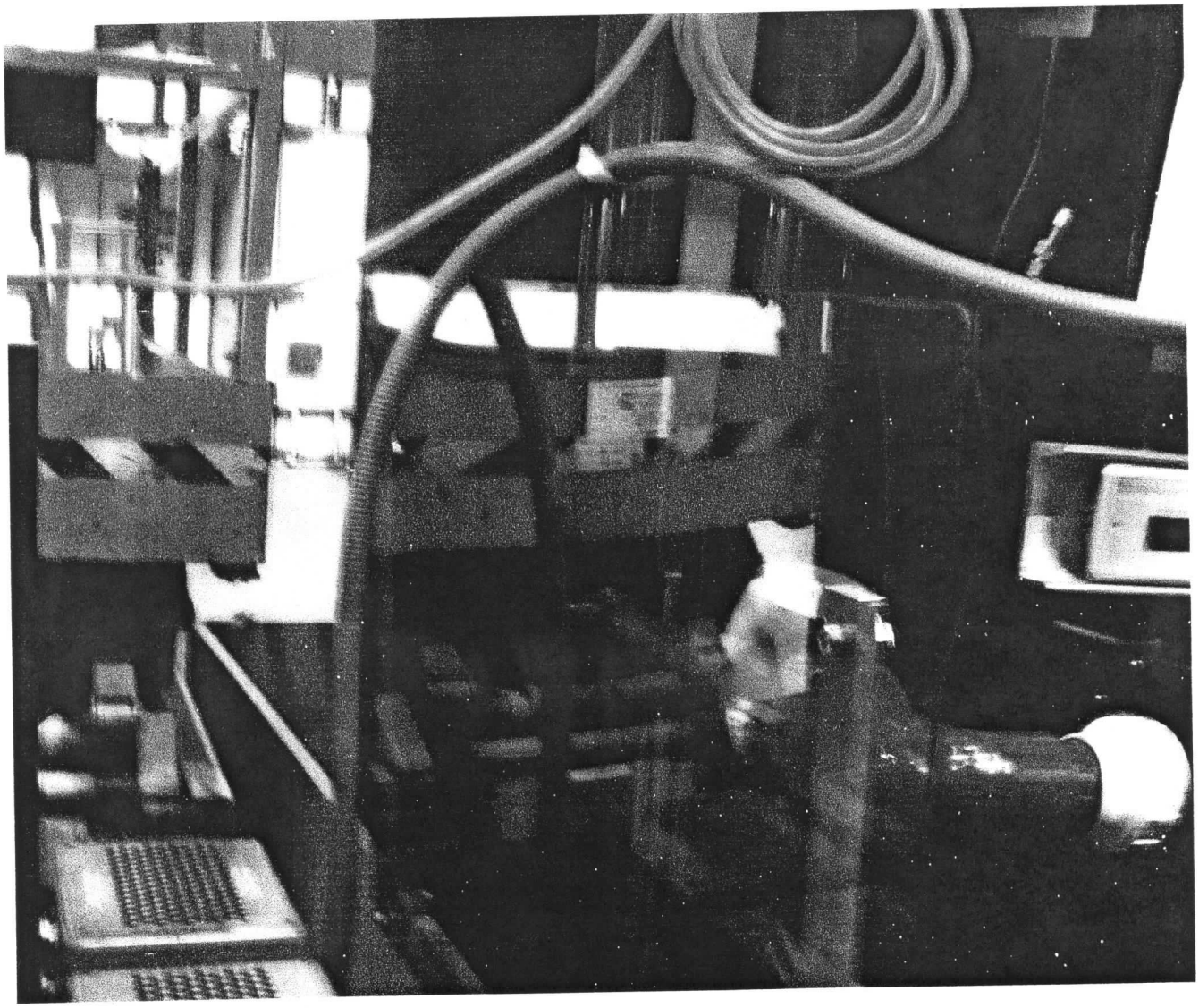
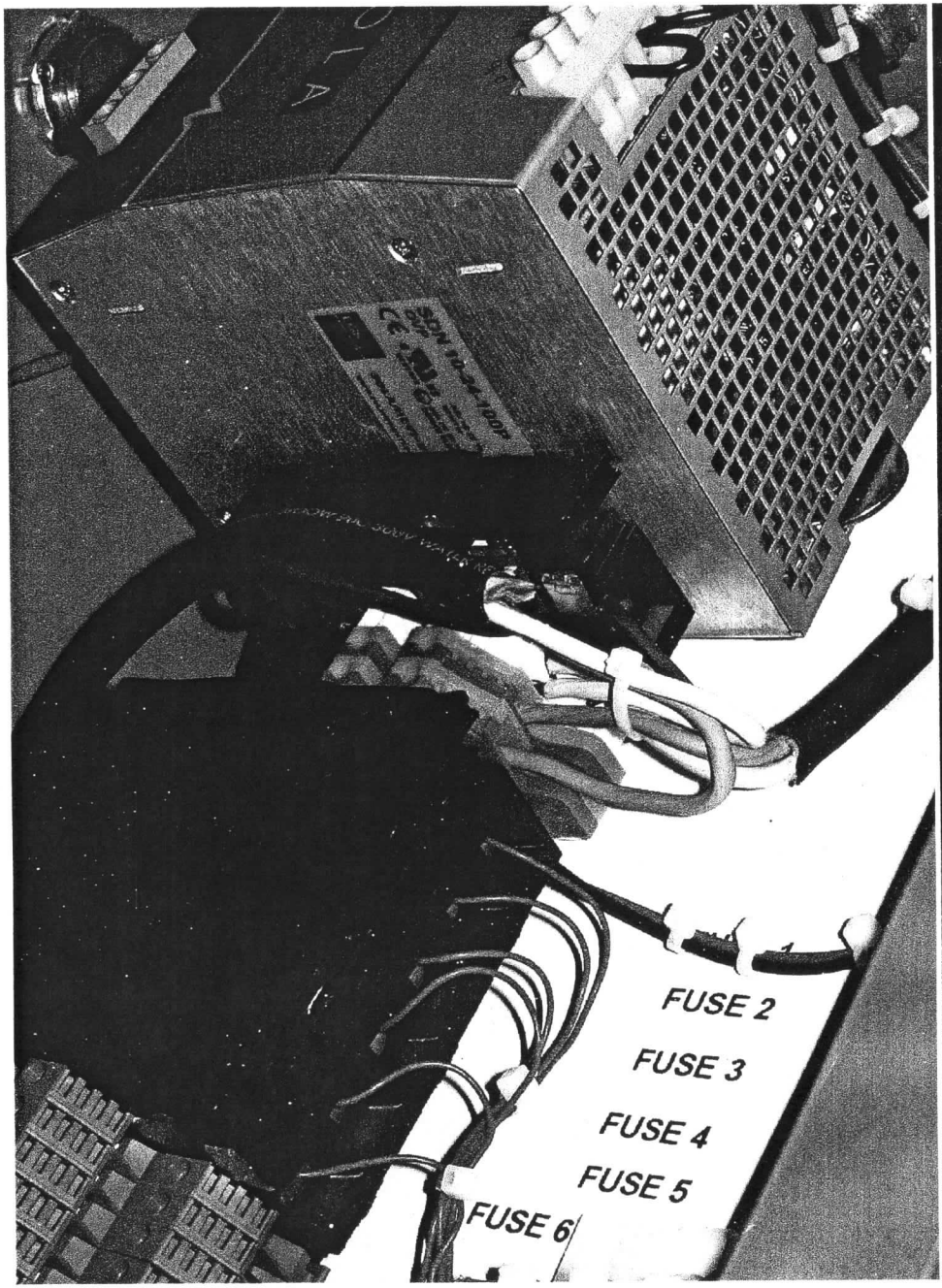
Dr. Leo Bellantoni (630)730-2155
MS 122, Fermilab Batavia, IL 60510

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